

OPTICAL LOGIC GATE BASED OPTICAL ROUTER

ABSTRACT

A switching element capable of being used in an optical processing device includes an optical signal separator operable to separate a multiple wavelength optical signal into one or more optical signal wavelengths. The switching element further includes a plurality of semiconductor optical amplifiers located on a single semiconductor substrate. The plurality of semiconductor optical amplifiers operable to perform an optical switching operation on at least one of the optical signal wavelengths. The switching element also includes a controller operable to generate a control signal that affects the optical switching operation performed by one or more of the plurality of semiconductor optical amplifiers.